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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,944	10/31/2003	Naoya Sashida	021557A	8925
23850 7590 05/18/2007 ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			EXAMINER DICKEY, THOMAS L	
			ART UNIT 2826	PAPER NUMBER
			MAIL DATE 05/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/697,944

714
Applicant(s)

SASHIDA, NAOYA

Examiner

Thomas L. Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 10/315,929.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/07 has been entered.

Relative to the claims prior to amendment (see the claim set filed 9/5/06), Applicant has added language –a second capacitor protection insulating film formed on the first capacitor protection insulating film;– after the existing language, “a second capacitor protection insulating film formed on the first capacitor protection insulating film;” on lines 7-8 (line #s refer to the existing claims, i.e. the 9/5/06 claim set) of claim 1. In violation of Rule 121(c), Applicant has not marked the additional language as new. In line 9 of claim 1, Applicant has deleted the language, “second capacitor protection insulating film” and has failed to include the deleted language, marked as deleted. Also in line 9 of claim 1, Applicant has added language – first capacitor protection insulating film – without marking the additional language as new.

Normally, a violation of Rule 1.121 is dealt with by non-entry of the amended claims. However, in this case this Office failed to find the Rule 121 violations until after the

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statutory time for responding to the Final Rejection mailed 9/25/06 had expired. For this reason, the claims have been entered. Entry of the claims makes Applicant's 2/26/07 RCE proper. There is no guaranty, however, that any of applicant's future claims that violate rule 1.121 will be entered. The consequences may be light (Notice of Non-compliant Amendment) or they may be severe (non-entry of amendment, denial of RCE, and consequential statutory abandonment of Applicant's case for the lack of a timely response).

Claim Objections

2. Claim 1 and 22 are objected to because of the following informalities:

These claims recite, "a second capacitor protection insulating film formed on the first capacitor protection insulating film," twice in succession.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1, as amended, requires a "plug" positioned to electrically connect a first-layer metal layer to an upper electrode, and located in a contact hole in a second insulating film. The application as filed places Applicant in possession of an invention having plugs 21a-21d formed in contact holes 17a-17d in second insulating film 17, said plugs 21a-21d being in contact with first-layer metal layer 23a-d. The invention in Applicant's possession also includes upper electrodes 13a. However, plugs 21a-d do not electrically connect first-layer metal layer 23a-d to upper electrodes 13a. The invention includes an electrical connection between first-layer metal layer 23a-d and upper electrodes 13a, but this connection does not include a "plug."

Claims 22 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claim 22 requires a "plug" positioned to electrically connect a first-layer metal layer to an upper electrode, and located in a contact hole in a second insulating film. The application as filed places Applicant in possession of an invention having plugs 21a-21d formed in contact holes 17a-17d in second insulating film 17, said plugs 21a-21d being in contact with first-layer metal layer 23a-d. The invention in Applicant's possession also includes upper electrodes 13a. However, plugs 21a-d do not electrically connect first-layer metal layer 23a-d to upper

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electrodes 13a. The invention includes an electrical connection between first-layer metal layer 23a-d and upper electrodes 13a through holes 17f-g, but this connection does not include a "plug."

Claim 6 is independently rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 6 depends from and includes all limitations of claim 1, including "a first-layer metal wiring" (IN ADDITION TO "a wiring" explicitly recited in claim 6) and "a contact hole" (IN ADDITION TO "a hole" explicitly recited in claim 6). The application, as filed, does not show Applicant in possession of an invention having BOTH "a first-layer metal wiring" AND "a wiring," and BOTH "a contact hole" AND "a hole," wherein the "first-layer metal wiring" is connected by the "contact hole" to the SAME upper electrode the "hole" connects the "wiring" to.

For amended claim 1, Applicant may not have intended to claim a "plug," of the same sort as originally plugs 21a-21d, connecting the first wiring layer to the upper electrode. Applicant may have intended the amended claim language "plug" to be construed broadly (although there is certainly no hint of this in the application as filed) enough to read on the "conductive-film ... formed on the ... contact holes 17e to 17g of the capacitors Q by the sputter method [with the result that the] first-layer metal wirings 23a, 23c, 23d are connected electrically to the upper electrode 13a via the contact holes

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17e to 17g,” as disclosed in paragraphs 0152 and 0153 and figures 1P-1R of the application as filed. Assuming this “saving” construction is the one Applicant intended for “plug,” there is no effective difference between amended claim 1 and previous claim 6. The claims will be rejected accordingly.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by HIKOSAKA ET AL. (20020061620).

Hikosaka et al. discloses a semiconductor device comprising a first insulating film 11 formed over a semiconductor substrate 1; a capacitor constructed by forming a lower electrode 16a, a dielectric film 17a, and an upper electrode 18a sequentially on the first insulating film 11; a first capacitor protection insulating film 19 covering the upper side of the upper electrode 18a and the aspect of the upper electrode 18a and the dielectric

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film 17a; a second capacitor protection insulating film 21 formed on the first capacitor protection insulating film 19; and a second insulating film 23 formed, in its entirety, directly on the second capacitor protection insulating film 21. Note figure 1L and paragraphs 0065-0073 of Hikosaka et al.

B. Claims 1-5, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by OKUTOH ET AL. (6,201,271).

Assuming the amended claim language "plug" has the broad, saving construction needed to read on Applicant's originally conceived contact hole-filling metal layers (see paragraphs 0152 and 0153 and figures 1P-1R of the application as filed), with regard to claims 1-5, Okutoh et al. discloses a semiconductor device with a first insulating film 6 formed over a semiconductor substrate 1; capacitor constructed by forming a lower electrode 22, a strontium-bismuth-titanate (SBT) dielectric film 23, and an upper electrode 15 sequentially on the first insulating film 6; a titanium oxide first capacitor protection insulating film 12 covering the dielectric film 23 and the upper electrode 15; an ozone-CVD formed silicon oxide second capacitor protection insulating film 13 formed on the first capacitor protection insulating film 12; a plasma-CVD formed silicon oxide second insulating film 17 formed on the second capacitor protection insulating film 13, said insulating film 17 covering the capacitor (note figure 8); wherein an amount of carbon contained in the second capacitor protection insulating film 13 is larger than an amount of carbon contained in the second insulating film 17, a first-layer metal wiring 24

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formed on the second insulating film 17 and connected electrically to the upper electrode 15 by a plug (seen in figure 8 as formed by part of first-layer metal wiring 24 filling the contact hole. Compare to Applicant's first-layer wirings 23c-d filling contact holes 17f-g to form "plugs" in figure 1R of Applicant's originally filed conception of his invention) extending through a contact hole (no part #, seen in figure 8, being filled by part of first-layer metal wiring 24) in the second insulating film 17, the second capacitor protection insulating film 13, and the first capacitor protection insulating film 12. Note figure 8 and column 8 line 26 through column 11 of Okutoh et al. It should be noted that Okutoh et al.'s second insulating film 17 is formed by plasma enhanced CVD and thus inherently lower in organic residue such as moisture and carbon than the ozone-CVD formed second capacitor protection insulating film 13. Those having skill in the art have long known this distinction and discussed it in various publications. Investigators seem to agree that the plasma temperatures gasify carbon and carry it away, resulting in a lower carbon content of the film made by this process. See Otsubo et al. 5,275,977 (figure 3a and column 5 lines 34-49) or Maeda et al. 5,554,570 (column 3 lines 19-22 or column 11 lines 1-7). Accord, Yamazaki et al. 2002/0006711 and Yau et al. 2001/0026849.

With regard to claims 22 and 23, Okutoh et al. discloses a semiconductor device with a first insulating film 6 formed over a semiconductor substrate 1; a capacitor constructed by forming a lower electrode 22, a dielectric film 23, and an upper electrode 15 sequentially on the first insulating film 6; a first capacitor protection insulating film 12

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covering the dielectric film 23 and the upper electrode 15; a second capacitor protection insulating film 13 formed on the first capacitor protection insulating film 12; a second insulating film 17 formed on the second capacitor protection insulating film 13, said insulating film 17 covering the capacitor (note figure 8); a first-layer metal wiring 24 formed on the second insulating film 17 and connected electrically to the upper electrode 15 by a plug (seen in figure 8 as formed by part of first-layer metal wiring 24 filling the contact hole) extending through a contact hole (no part #, seen in figure 8, being filled by part of first-layer metal wiring 24) in the second insulating film 17, the second capacitor protection insulating film 13, and the first capacitor protection insulating film 12. Note figure 8 and column 8 line 26 through column 11 of Okutoh et al. The Examiner notes, in passing, that Claim 1 is no longer the broadest claim in the claim set, inasmuch as claim 23 "reads" on claim 1.

Conclusion

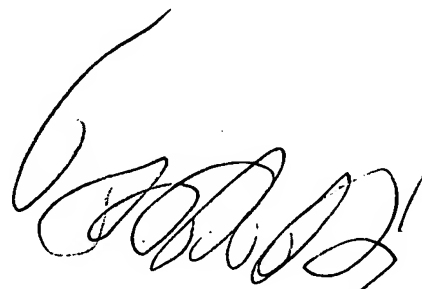
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Sue A. Purvis, at 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

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Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thomas L. Dickey', is positioned above the printed name.

Thomas L. Dickey
Primary Examiner
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